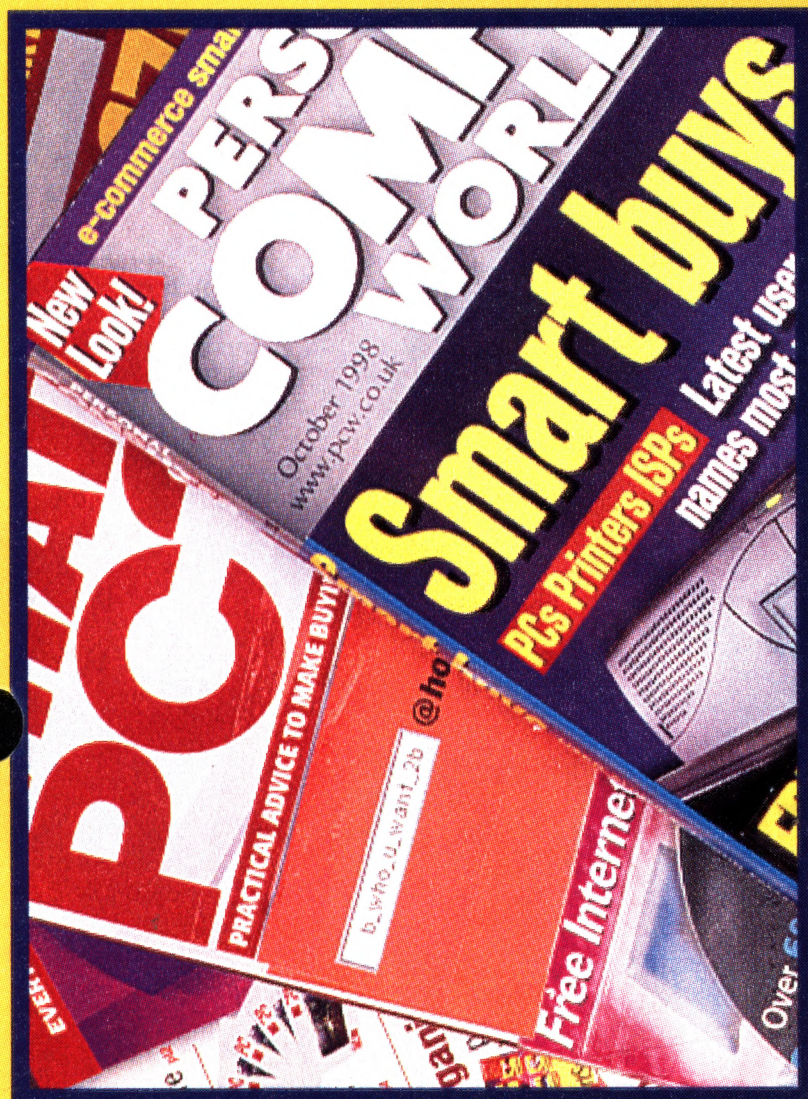
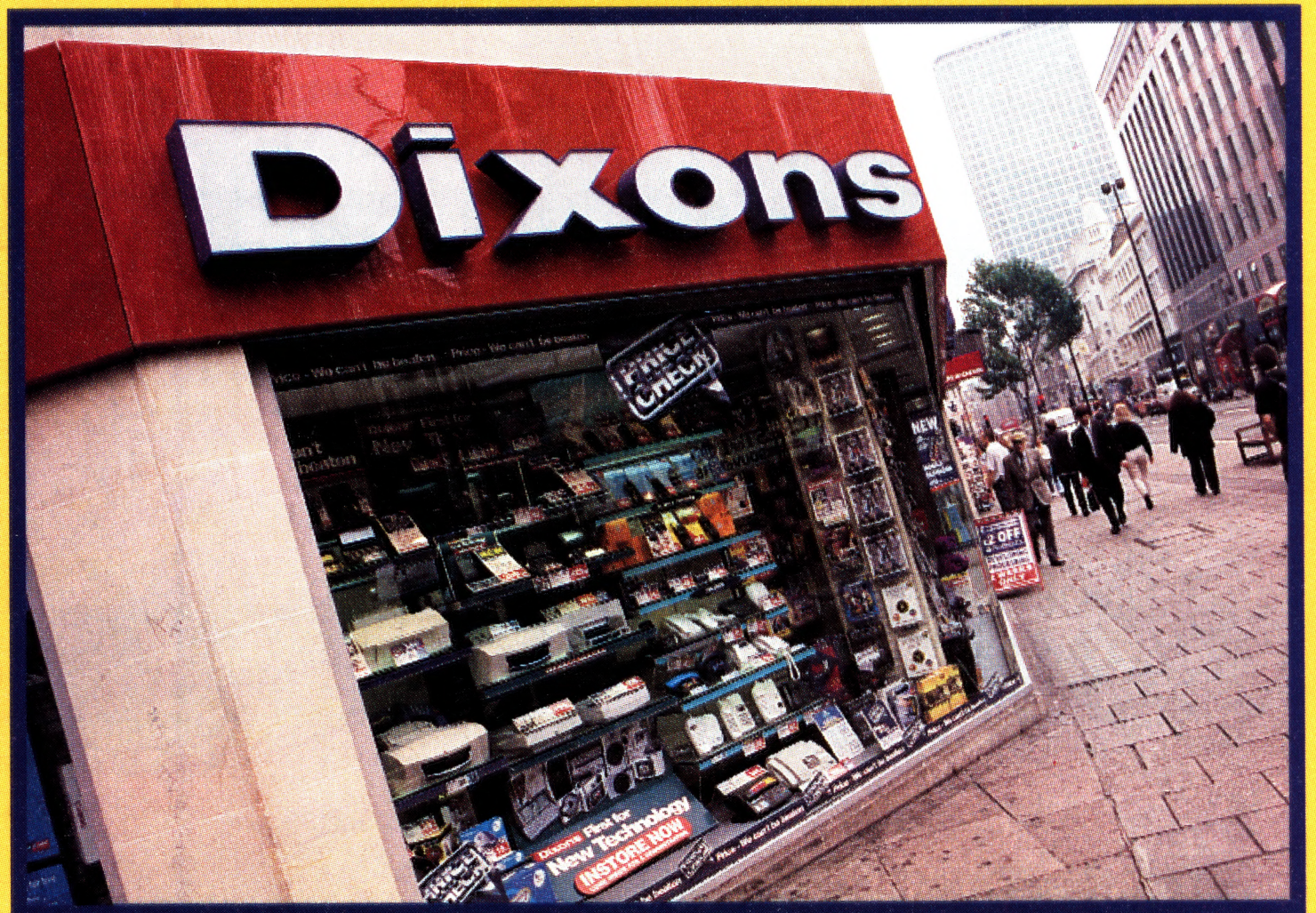
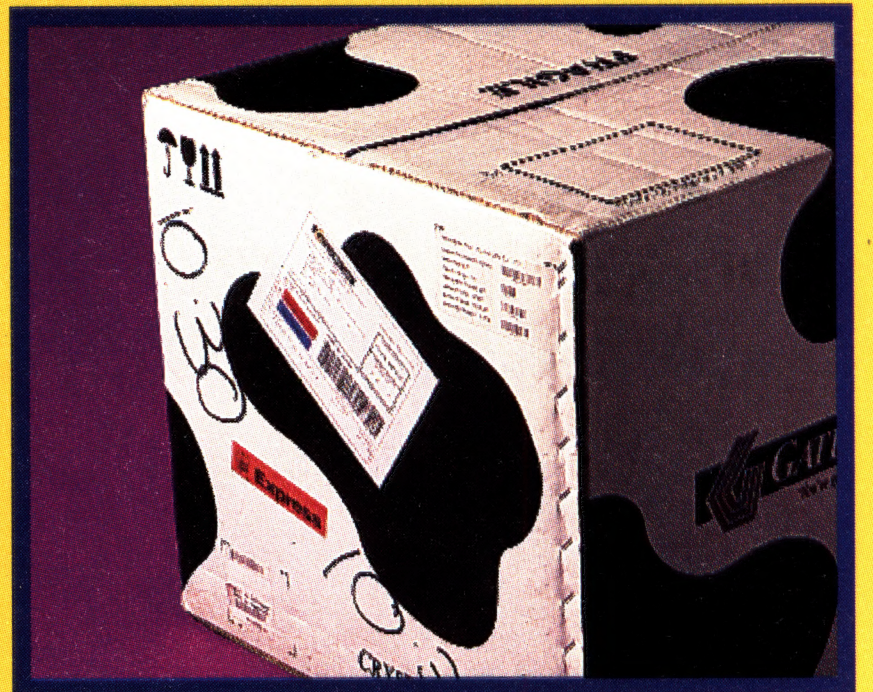


Beginners' KnowHow

3 GETTING STARTED: GUIDE TO BUYING



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Buying a PC.

Before you spend a lot of money on a new computer system, follow this guide to where to go and what to look for.

It's obvious to just about everyone how useful a PC can be in the office, but have you thought how great it would be to have one at home? You could keep on top of the household accounts or write professional letters to the bank manager. Your children could have instant access to a wealth of information to help them with homework, or you could just relax in front of it playing games.

Check the prices and you'll see that a home PC could easily be one of your most expensive purchases, after your home and your car. There are dozens of different manufacturers, and plenty of places to buy them from too.

But if you're confused about what to buy and where to buy, read on and you'll find out how to make sure that the computer you choose is the right one. You'll also find advice on where to buy, where to get the best service and where to get a good deal, whether you want a computer for the kids to learn on, for playing games, or for starting your own business from home.



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Where to go

Before you even start looking for a PC you should decide which type of shop fits your needs.

There are more places than ever to buy a PC, and they all have advantages and disadvantages, depending on what you need. You can find places where you'll get a rock bottom price — as long as you know what you're looking for. Others will offer better service, but at a premium.

You don't need to wander around comparing prices in different stores. You can pick up the phone and order a computer by credit card from a magazine, or buy one over the Internet, made to your exact specification. Follow the guidelines here and you'll see which place is best for you.

The high street

High street stores like Dixons and Currys in the UK are an easy place to buy a PC, and you'll find well-known brands like Compaq and Packard-Bell. However, often the prices aren't as competitive, and the models may not be the latest ones. In smaller stores, there may not be people who are able to answer all the questions about your computer, either.



The supermarket

Although there aren't many supermarkets selling computers yet, those that do are offering very good value for money. However, you'll probably find that there isn't a choice of models, and there may not be anyone to demonstrate the system or answer questions. It really will be just the same as buying anything else from your local supermarket.



PC superstores

If you want to try a PC out before you buy it, a PC superstore, like the UK's PC World, is the best place to shop. You'll find a wide range of PCs, and plenty of staff to answer questions. And if you decide to buy, you'll be able to walk out of the store with whatever you've chosen, right away.

You may even be able to arrange some sort of credit deal, to save you paying for everything in one go. But as with high street stores, the prices aren't as competitive as mail-order companies.



Mail order

Pick up a PC magazine and you could be forgiven for thinking that it's all adverts. If you compare prices, there's no doubt that ordering a PC off a magazine page is one of the best ways to do it. You'll find the latest technologies, and at the keenest prices.

You won't be able to try before you buy, and you'll have to wait. In many cases, the PC will be put together to order. It's also unlikely that there will be any sort of credit facilities available, so you'll need a credit card.



Online shopping

Large companies like Dell offer online shopping, as well as smaller mail-order PC makers. You can't try before you buy, but there will often be lots of information about different systems. The disadvantages are much the same as for mail order, and you'll certainly need a credit card.

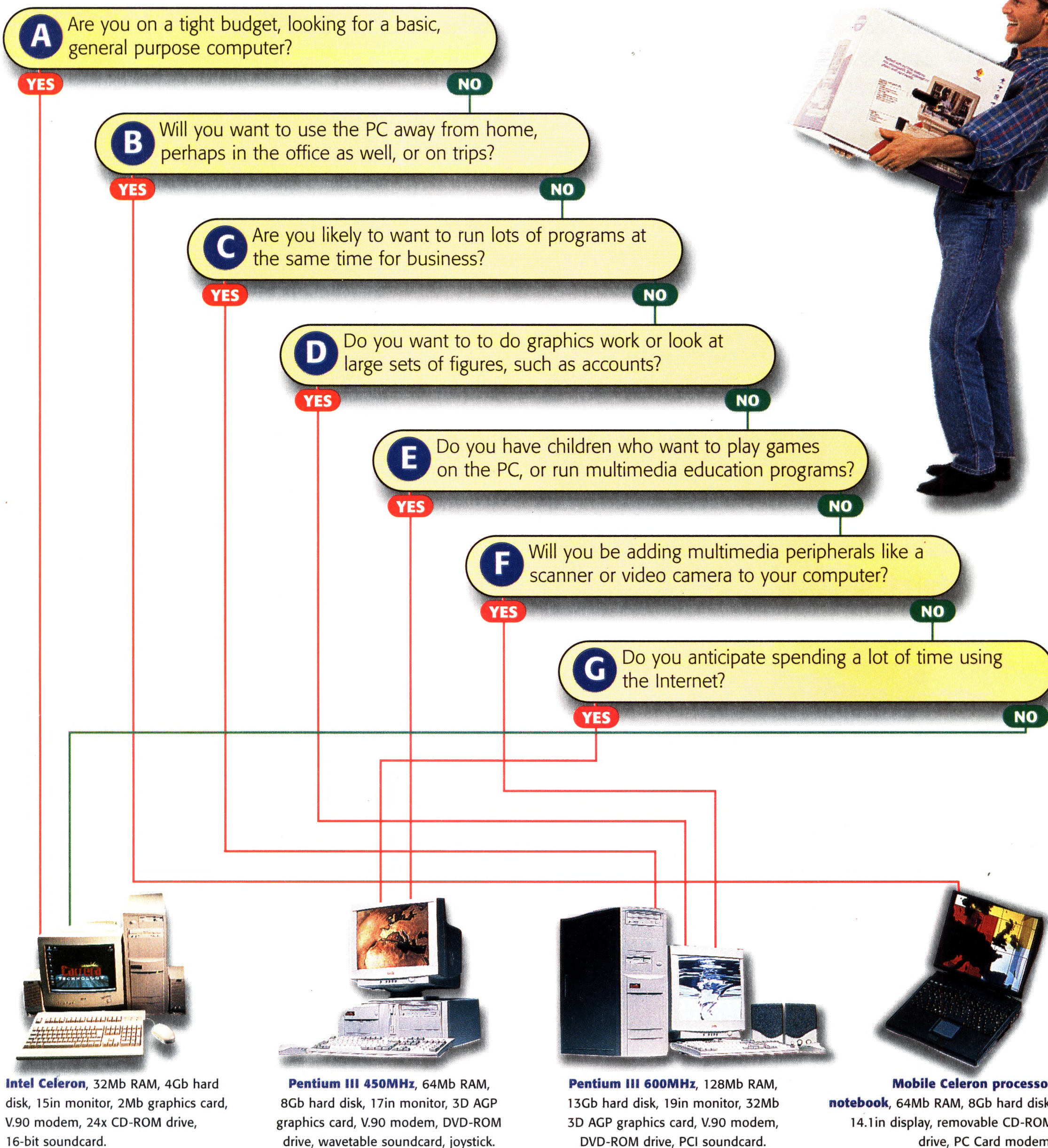
Second hand

You can buy PCs second hand, but remember you'll be without a warranty, and you could end up with a PC that isn't powerful enough to run the latest programs. Unless you're on a really tight budget, it's not recommended.

Which PC?

Choosing a new PC is not easy. Follow these steps to make the process simple for you.

Buying a new PC can be hard, particularly if you have never owned or used one before. So here are four sample configurations. Just follow the questions and you'll have a better idea of the sort of system that will suit you best.



Read the label

Learn to recognise the bits that make up a PC before a salesman tries to blind you with science.

You might think a PC's just a box that does everything, but it's the sum of many parts, and each one has a specific purpose. Knowing what they do, and why, means you can make more sense of the different options you'll be bombarded with when you go shopping for a computer.

You may see a package that looks great and seems to include everything, but a little knowledge may help you to choose a better system, by cutting out the things you don't need, so you can spend more money on those you do.

If you're not too bothered about playing games, why worry about a 3D graphics card, or special speakers? You might be better off opting for a faster modem to give you a better connection to the Internet. Or you might decide that you want the best possible quality when you print out letters, even if it does take a little longer, and opt for a different type of printer, rather than a bigger screen.

To help you make the right choices, here are what some of the parts of a modern computer do, and what you might need to consider when you're choosing your system.

Graphics card

Graphics cards produce the picture on your PC's display. A card with more memory built into it will display more colours and more information at the same time. If you want to play games, look out for a card with 3D facilities. But 3D isn't necessary if you'll be mostly running word processors or other business type programs. You can add a separate 3D card later if you like.

Soundcard

Soundcards are used to play back music and sound effects. A wavetable card is most realistic; it has samples of real instruments used to create music, rather than a synthesiser.

Modem

A modem links your PC to the phone line, so you can send and receive email, surf the Internet or exchange faxes with other people. An internal modem fits inside your PC, while an external one sits on your desk, and has lights to let you know what's happening. A modem's speed is measured in bits per second (bps). The faster the speed, the better.

Speakers

Some PCs rely on a speaker inside the case, but for better quality look for external ones. See if you can find some that clip on to the side of your monitor. A sub-woofer is an extra speaker which enhances bass sounds.

CD-ROM or DVD drive

Many programs come on CD-ROMs so you can install them quickly and easily; you can also use a CD drive to play music. Faster CD drives mean you can install programs more quickly. The latest PCs have DVD drives, which can read CDs as well as DVD discs, which means with the right software, you could even watch feature films on your PC.

Processor

The processor is the heart of a PC. It does all the work. The speed is measured in Megahertz (MHz) and the bigger the number, the faster the PC. A Pentium III chip is faster than a Pentium II, which in turn is faster than the Celeron.

Memory

The memory (or RAM) chips are where your computer stores the information it's working on at the moment. More memory helps it run faster, and a system with less than 16 megabytes (Mb) is seriously underpowered.

Hard disk

Computer programs and the documents you create are stored on the hard disk, so bigger is better.



Look and feel

If you are going to spend a lot of time using your PC it's important to feel comfortable with it.

PCs aren't just dull boxes. That may have been true a few years ago, but now they come in lots of shapes and sizes, and with different add-ons. You can spend almost as much time thinking about what you want your PC to look like as you can deciding what type of system it should be.

The PC

There are, with the rare exception of all-in one boxes that include the monitor as well, only two types of PC — the tower case, and the desktop case. As the name suggests, a tower case is tall and narrow, while a desktop case sits on top of your desk, usually with the monitor on top of it. A tower case has to go either on the floor, or beside the monitor. Sometimes, you'll find that a tower case has more space to add extra expansion cards or more disk drives than a desktop, but on the whole you can make your choice based on which is the more convenient shape. It might also be worth looking for a case that's easy to open if you think you might want to upgrade later — some need you to undo dozens of screws, while others just come apart at the flick of a lever.



The monitor

The monitor is the face of your computer, so it's worth making sure you get a good one. Although you'll find some systems with a 14in monitor, a 15in one isn't much more expensive, and will give you a much better display. If you want to do lots of graphical work or often use large spreadsheets, consider a 17in model.

You can also buy monitors that have speakers built in, which will save you having to clutter up your desk. For the ultimate in size, flat-panel liquid crystal displays (LCDs) take up very little desk space, but they're still very expensive.

A key thing to look for when you're choosing a monitor is the refresh rate, which is how many times a second the picture is updated. Look for a rating of at least 75Hz; the higher the number the better, especially if you're going to be using the computer a lot.



The keyboard

If you buy a cheap PC, it'll come with a cheap keyboard, and while that might be fine for using it occasionally, it's a false economy for anyone who'll be doing a lot of work. A bad keyboard, together with a bad seat, can end up causing you lots of problems, including RSI.

It's worth spending a little extra for an ergonomic keyboard, which will usually include a wrist rest to help you keep the right position, and some also have the keyboard split in two, which makes typing even more natural though it's also awkward if you can't touch type.

If you can't stand cables, you can even buy a cordless keyboard, which you just have to point at the computer, which is great for leaning back in your chair and relaxing. For the more internationally minded, you can even look out for some of the newest keyboards that have a Euro symbol on them.

The mouse

There are different types of mouse and there are alternatives too. How about a pad? It's a small sheet that you write on with a special pen, so you can draw on screen just as easily as you would do with a piece of paper. With most PCs you get a standard two-button mouse, but you could buy a cordless mouse or one with more buttons. The third button can be configured to do whatever you want. There's also a mouse with a wheel between the buttons. The wheel can be used to scroll through documents without having to move to the side of the screen.



Software bundles

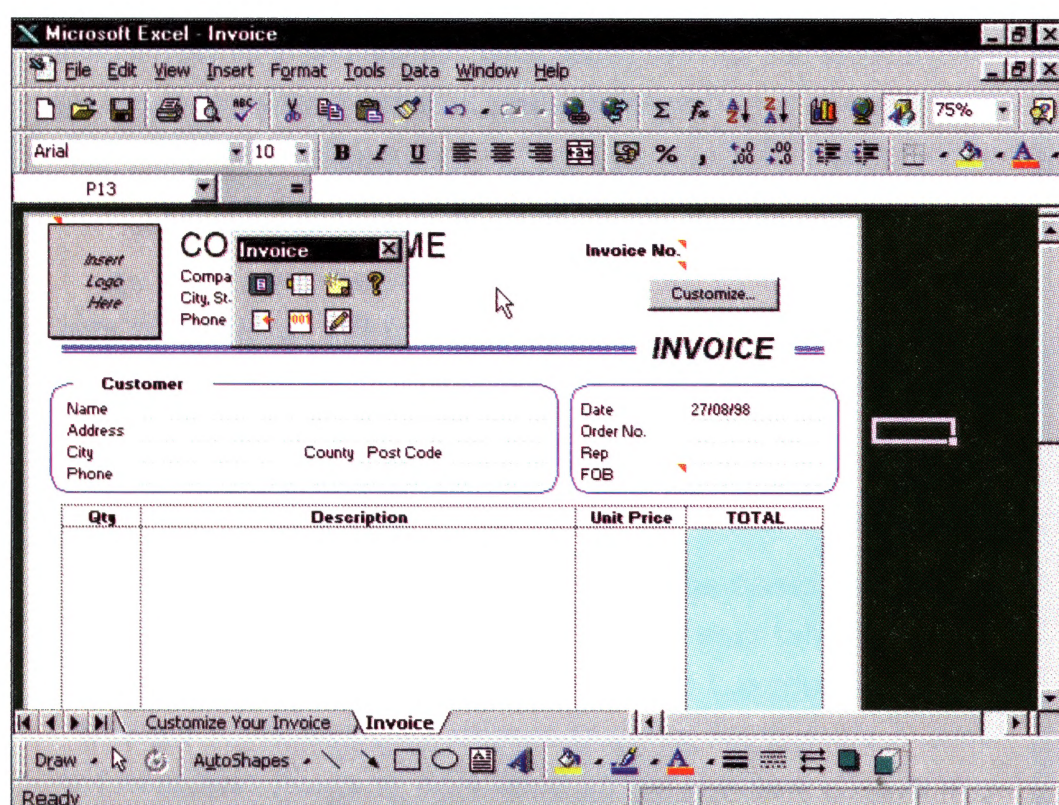
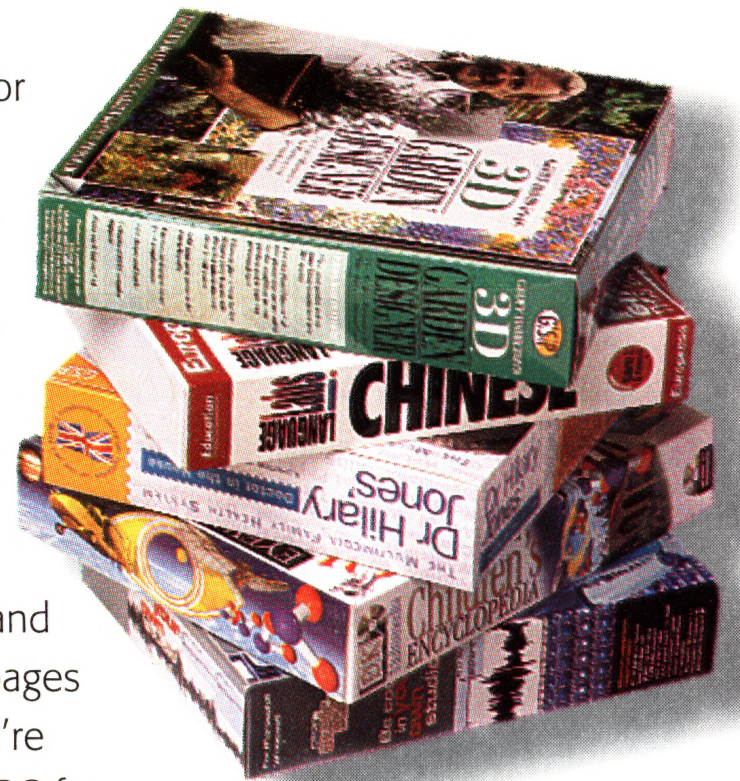
Think carefully about software bundled with a new computer: will it do exactly what you want?

Without software PCs can't do anything useful. Although Windows is usually bundled with new PCs, you can only use it to write letters, send email and connect to the Internet. To do real work you need extra software.

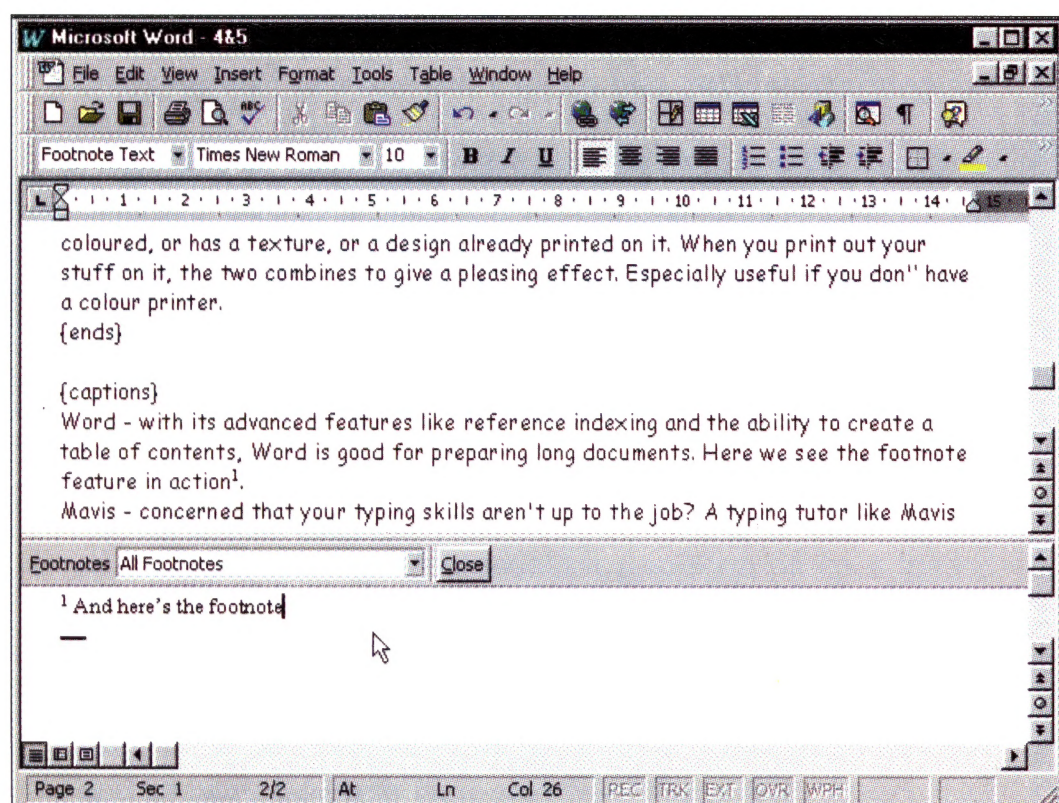
The best solution is a software bundle, a collection of programs sold as a package or included free with a new PC. Free software is enticing, but what appears to be a great deal because it includes so many programs might be a bit of a con. The first thing to consider is what you want

to do with your PC. For most people a word processor is essential, and a spreadsheet, which can be used to do calculations or organise information, is next on the list.

You might also want a personal organiser and a program to create pages on the Internet. If you're planning to use your PC for business, a database program is useful too.



Excel is one of the most popular programs. It's a spreadsheet, which means it will can be set up to perform calculations on numbers, and even turn them into instant graphs.



A word processor such as Microsoft Word is essential for business tasks such as letter writing or desktop publishing.

Office suites

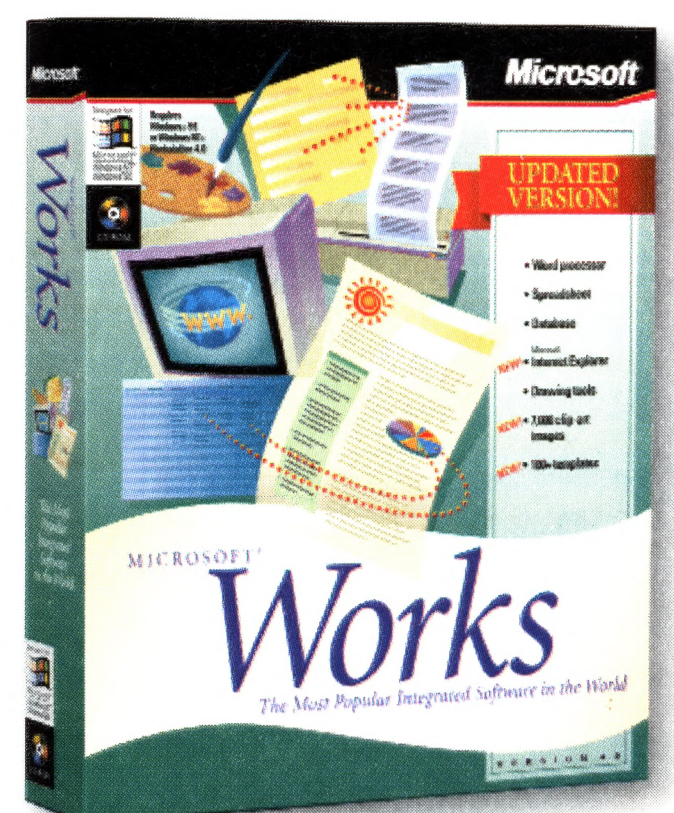
The most common bundle is called an office suite. Office suites usually contain a spreadsheet, a word processor, a personal organiser and sometimes extra programs like a Web page editor. The most popular suites are Microsoft Office, Lotus SmartSuite and Corel WordPerfect Suite.

If you're planning to buy one of these suites, remember to shop around. Prices vary, and you may be able to upgrade the software that came with your PC at a discount.

Integrated software

Cheaper PCs are more likely to come bundled with an integrated package – a single program that incorporates a word processor, spreadsheet, database and so on. The most popular integrated packages are Microsoft Works and Claris Works. They are more than adequate for most things you need to do with your computer at home.

However, if you plan to bring work home from the office, find out whether you can save files in a format that is compatible with your home system. There's no point bringing work home to find your computer can't read it.



Buyer beware

Know your rights and you should be able to avoid being cheated by an unscrupulous supplier.

Understandably, people can be apprehensive when they are thinking of spending a lot of money on something like a PC. What if it goes wrong? What if it's not delivered? How should you pay? Who can help solve problems?

Fortunately, there are straightforward answers to all these questions, and the shopping list on the next page will help you to compare PCs from different suppliers without too much difficulty. Spaces have been left on the form for you to fill with the details of different systems as you shop.

Don't forget

It's easy to compare basic specifications such as the amount of RAM, the size of the hard disk and so on. But you can forget other things that are just as important. Will you have to take the PC back to the manufacturer if it goes wrong, for instance? Or will someone come to your home to repair it? If you work from home, that could be vital.

Fill in all the spaces in the shopping list for each PC you're considering, and if the answer isn't obvious, don't be afraid to ask. Remember: it's your money, and you're entitled to know what you'll be spending it on.

There is no final answer to which computer to buy, because everyone is different. You'll have to weigh up the different factors yourself.



Watch out!



It can sometimes seem like the odds are stacked against you when you're faced with a computer salesperson who seems to know it all, but here are some points to bear in mind:

BEFORE YOU BUY

- If you can, pay by credit card, especially for telephone and mail order purchases. The credit card company is legally liable as well as the supplier, so if the PC doesn't arrive, you will get your money back.
- Always write down the names of people you deal with in person or on the phone. If there are any problems later, it'll make them easier to sort out.
- If you need a computer by a certain date, write Time Is Of The Essence on the order form, otherwise you won't have any grounds for complaint when it doesn't arrive or turns up months late.
- If you need to do a specific task with your computer, make that clear to the salesperson. Whatever you end up buying must be fit for any task you told the salesperson you wanted to do with it.
- Remember to confirm that a price includes taxes, delivery and all the options you want with the computer.
- In-store credit agreements can seem attractive, but read the small print carefully. Buy now, pay later, interest free credit can turn out to be expensive if you miss the payment date. A store must give you a written quotation for credit if you ask. Compare it with a bank loan or credit card loan for the same amount.

WHEN YOU'VE BOUGHT YOUR COMPUTER

- Don't just sign for a delivery without checking the boxes to make sure that the contents are undamaged. If there is damage to the packaging, you should note that clearly on the courier's receipt, and contact the supplier immediately.
- Check all the parts of your system as soon as you can. If you don't use your scanner for a month, and then discover it doesn't work, you'll have a harder time having it replaced.
- If something goes wrong, complain promptly, but stay calm. You won't win any support by being rude to people.
- You are entitled to demand your money back within a reasonable time if the PC doesn't work. You don't have to accept a credit note or a replacement from the supplier.
- If a supplier isn't dealing with your complaint properly, contact your local Citizens' Advice Bureau for help. If you still can't get your money back and you feel you're entitled to it, contact the credit card company that you used to buy the computer.

Shopping list

Fill in the **PC KnowHow** shopping list as you look around to help you compare computer systems.

	Computer 1	Computer 2	Computer 3
Supplier			
Brand and model			
Sales telephone number			
Contact name			
Quote reference			
Processor type and speed			
Memory			
Disk size			
CD-ROM speed	£*	£	£
DVD-ROM			
Video card type and memory			
Soundcard	£	£	£
Speakers	£	£	£
Modem			
Mouse type			
Keyboard type			
Monitor size			
Desktop or tower case?			
Windows 95 or 98?			
Software included			
Type of warranty			
Who pays for returning PC for repair?			
Length of warranty			
Cost to extend warranty			
Is telephone support included?	£	£	£
Can the system be set up for you?	£	£	£
Total cost of system (incl. tax or VAT)			
Delivery charges			
Time to deliver system			
Payment method			
APR if credit is being offered	£	£	£
Total cost of credit			
Length of credit period			

* Some add-ons are optional and will increase the price of your system. Fill in the extra cost here.

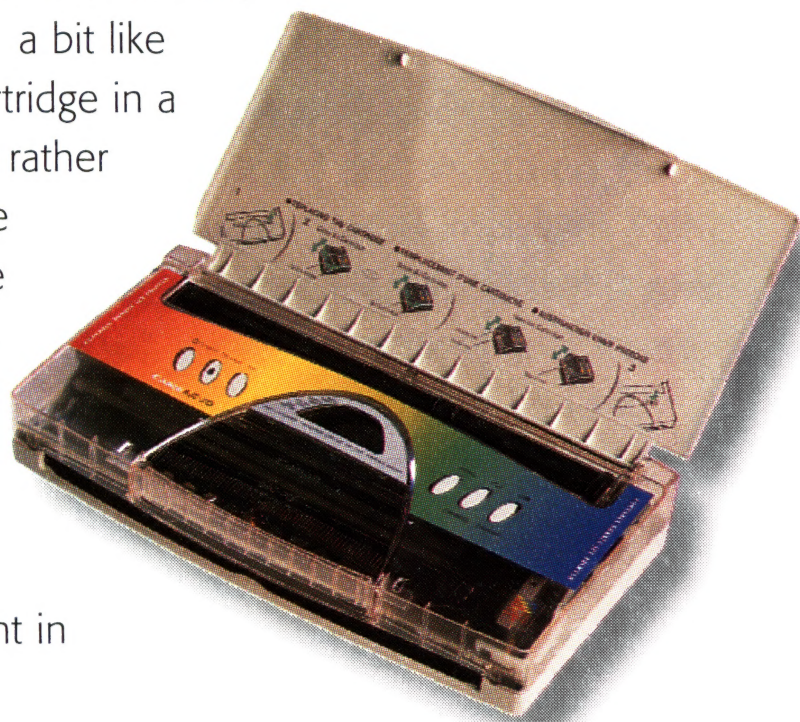
Buying a printer

After your PC itself, a printer is probably the most important bit of equipment you can buy.

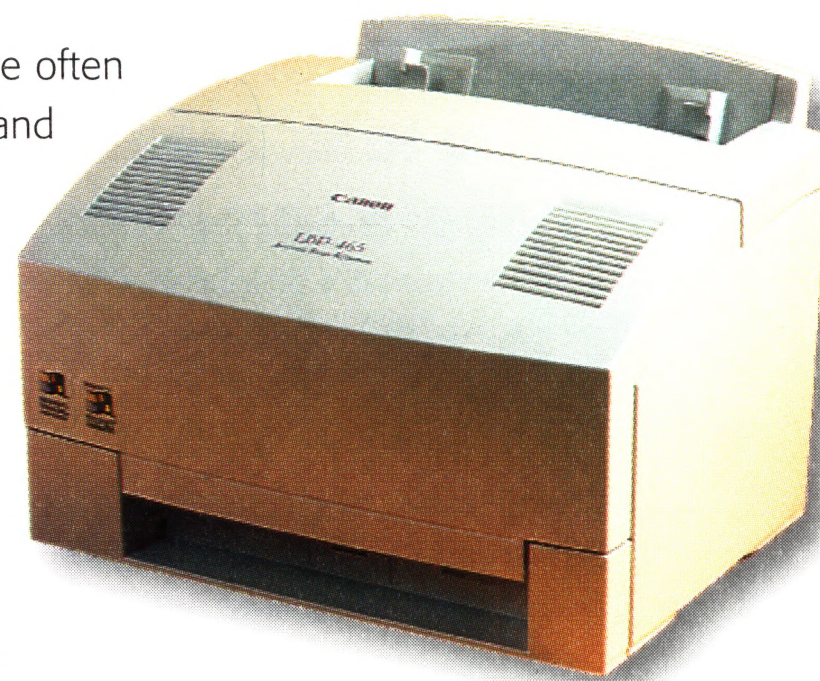
There's no doubt that a computer is a useful tool and that you can do an awful lot of things with one. But sooner or later you'll need to print things out, which means, of course, you'll need a printer.

Not so long ago there was really only one type of printer you could buy: the dot matrix. Anything that offered high quality printing was far too expensive for a home user. Nowadays any computer store will stock several printers to suit a variety of needs at a range of accessible prices.

The cheapest type of printer is an inkjet printer (below). It works by firing dots of ink at a sheet of paper — a bit like squeezing the cartridge in a fountain pen, but rather more precise. The cheapest of these printers cost very little, but top-of-the-range models can cost much more, and will often print in colour as well.



Inkjet printers are often quite compact, and if you're buying a portable PC, you'll be able to find a portable inkjet to match it. The latest inkjets can print on special paper to give photographic quality, which is ideal if you have a digital camera.



See the light

The second common type of printer is a laser (above), which works in a similar way to photocopiers, using a fine black powder called toner to make up the images. Personal laser printers are compact and cheap. They also rely on your PC to do a lot of the work of transferring the page on to paper, so a slow PC will print more slowly.

More expensive laser printers have their own processors built in, and print out pages much more quickly, and with higher quality. With one of these, you can get on with your work while the printer bothers about the printing. But the low cost means that they are most useful for people whose work involves printing out lots of letters.

Jargon buster

Cartridge The part of the printer that you replace when it runs out of ink or toner. Find out how many pages you can expect from each cartridge. More pages and a cheap cartridge means the printer is cheaper to run.

CMYK This stands for cyan magenta yellow and key (or black), the four colours used in an inkjet printer to make up any other.

Dpi This stands for dots per inch, the number of dots the printer puts on the page in each inch. High numbers mean better quality.

GDI printer Sometimes called a Windows printer, this is the type of printer that uses your computer to do most of the work of creating the page.

Gsm This stands for grammes per square meter and is often used to refer to the thickness of paper a printer can handle. Bigger numbers mean thicker paper or card; typical photocopier paper is 80gsm, while a business card is about 120gsm.

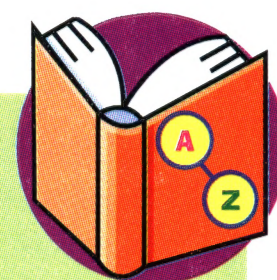
Parallel port The most common way of connecting a printer to a computer. All PCs have a parallel port. The alternative serial port is much slower.

Photo-realistic This describes a printer that can produce near-photo quality prints. Often you'll need a special ink cartridge and special paper for the best results.

Ppm This stands for pages per minute, the speed at which a printer prints. Colour printers will often quote two speeds, one for colour printing and one for black and white.

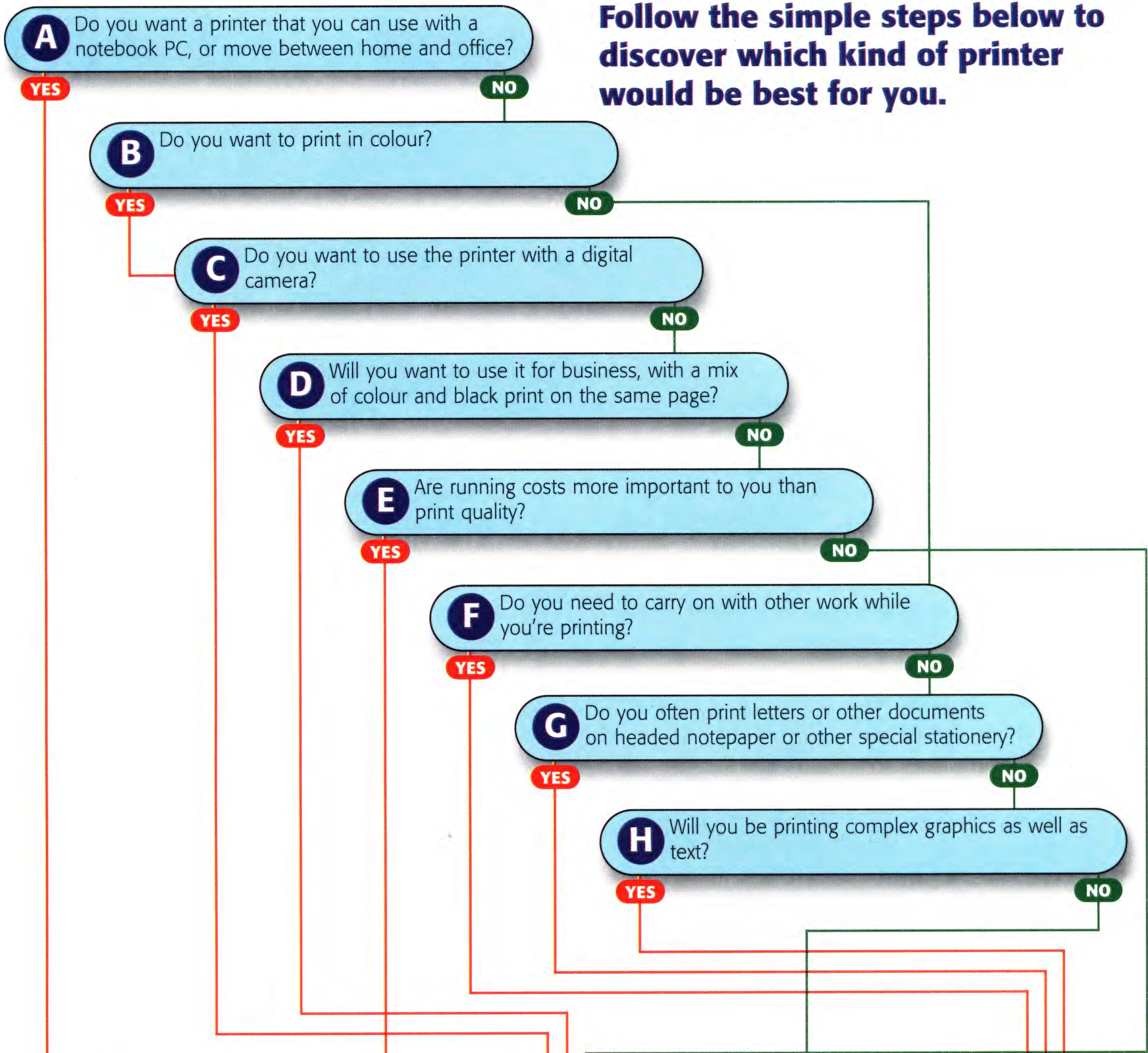
Sheet feeder A device or part of the printer that takes a sheet of paper from a stack and feeds it through. On printers without this facility (usually portable, or very cheap ones) you'll have to put each sheet in yourself at the right time.

Toner The fine powder used by a laser printer to create characters on the page.



Choosing a printer

Follow the simple steps below to discover which kind of printer would be best for you.



Portable inkjet printer, with a typical print speed of two to three pages per minute, usually black printing only with a manual paper feed.



Desktop inkjet printer, up to around six pages per minute, capable of colour printing, although you may have to change cartridges for colour.



High quality inkjet, six to eight pages per minute, with dedicated black and colour ink cartridges, and photo printing with suitable ink and paper.



Personal laser printer, printing at between four and six pages per minute, but relies on your computer to do a lot of the work.



High-speed laser printer, capable of printing around eight pages per minute and holding more than one type of paper simultaneously.

Which printer?

Most people opt for an inkjet printer, but for special needs consider a laser or dot matrix.

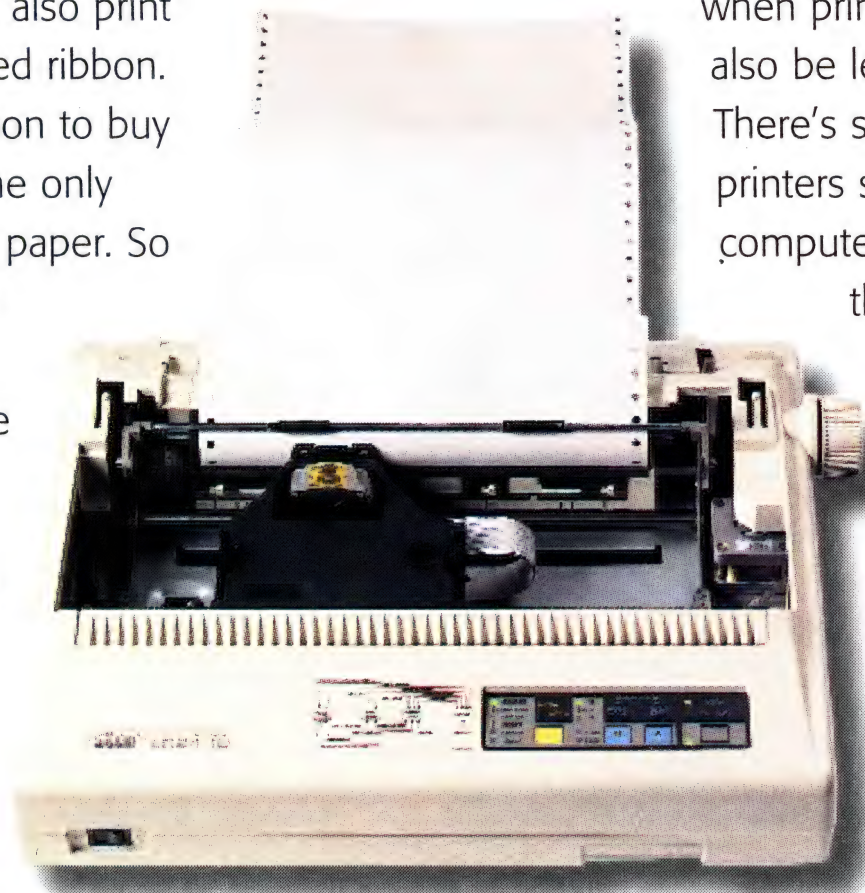
Choosing the right printer can be almost as complicated as picking a computer. There's no simple answer to which one is best, but understanding the different types will help you make the right decision.

Dot matrix printers

These are the cheapest type of printer, but you won't find too many of them around now. Dot matrix printers (below) work just like the printer in a cash register, making letters up out of dots, created by pins fired against a ribbon.

The more pins a dot matrix printer has the better the quality of its printing. Look for a 24-pin printer if you want to buy one. Most models can also print in colour, using a multicoloured ribbon.

There's really only one reason to buy a dot matrix printer: they're the only type that can print on carbon paper. So if you want carbon copies, or you have special stationery that has carbon in it — invoice forms, for instance — you'll need one of these. For anything else, they're too old fashioned and not of good enough quality. You can buy an inkjet printer much more easily, so unless you see a tremendous bargain, you should not even consider buying a dot matrix printer.



Inkjet printers

For most home users, this is the best sort of printer to buy. An inkjet (top right) can produce both colour and black and white printing, and the quality is very good. A modern inkjet will produce printouts with a resolution of 600 dots per inch (dpi). It will also typically be able to print out pages of text at between four and six pages per minute (ppm). Some larger models can print on paper as large as A3, while for people on the move, there are printers small enough to fit in a briefcase.



Don't be taken in by your first glance at the figures. Many inkjet printers work much more slowly when printing in colour, and the colour resolution may also be less than in black and white. There's something else to bear in mind; most inkjet printers simply aren't very clever. They rely on your computer to do most of the work, and so you may find the PC goes slowly when you're printing.

To get the best from an inkjet printer you need to be careful about the paper that you use. While almost all will print on cheap photocopier paper, look closely and you'll see the difference between brands of paper. Since the printer works by firing wet ink at each sheet, if the paper's too absorbent, images smudge. For the best results, you need special paper, which can be expensive. Some printers claim to give photo quality output, but for those you may need to buy a special ink cartridge as well as the paper, making it expensive. Stick with ordinary paper and ink for all your day-to-day printing.

Laser printers

These are also sometimes called page printers or LED printers. Unlike inkjets, which create the image of a page one row of dots at a time, lasers build up an image of a whole page on a special drum, just like a photocopier.

Once the whole page is created the image is transferred to paper using toner, again like a photocopier. The only difference is that instead of being scanned with a bright

light, the image is made by a computer controlling a laser, or a series of LEDs (light emitting diodes).

To create an image of a page laser printers need memory, just like your PC. A printer with more memory can create more complicated pages. And you can even program some to do things like add your company letterhead to each page that's printed.

Low cost laser printers generally have a resolution of 300dpi, although more and more models manage 600dpi at a reasonable price. Don't just look at the figures the salesperson gives you, as many printers have some form of enhancement, so they'll claim a resolution of 300dpi (600dpi with enhancement). A real resolution is more important than an enhanced one.

Laser printers usually come with more sophisticated options for handling paper than other types of printer. You may be able to have two stacks of paper on some so you can have headed notepaper and ordinary paper in it at the same time, saving you having to swap over all the time.

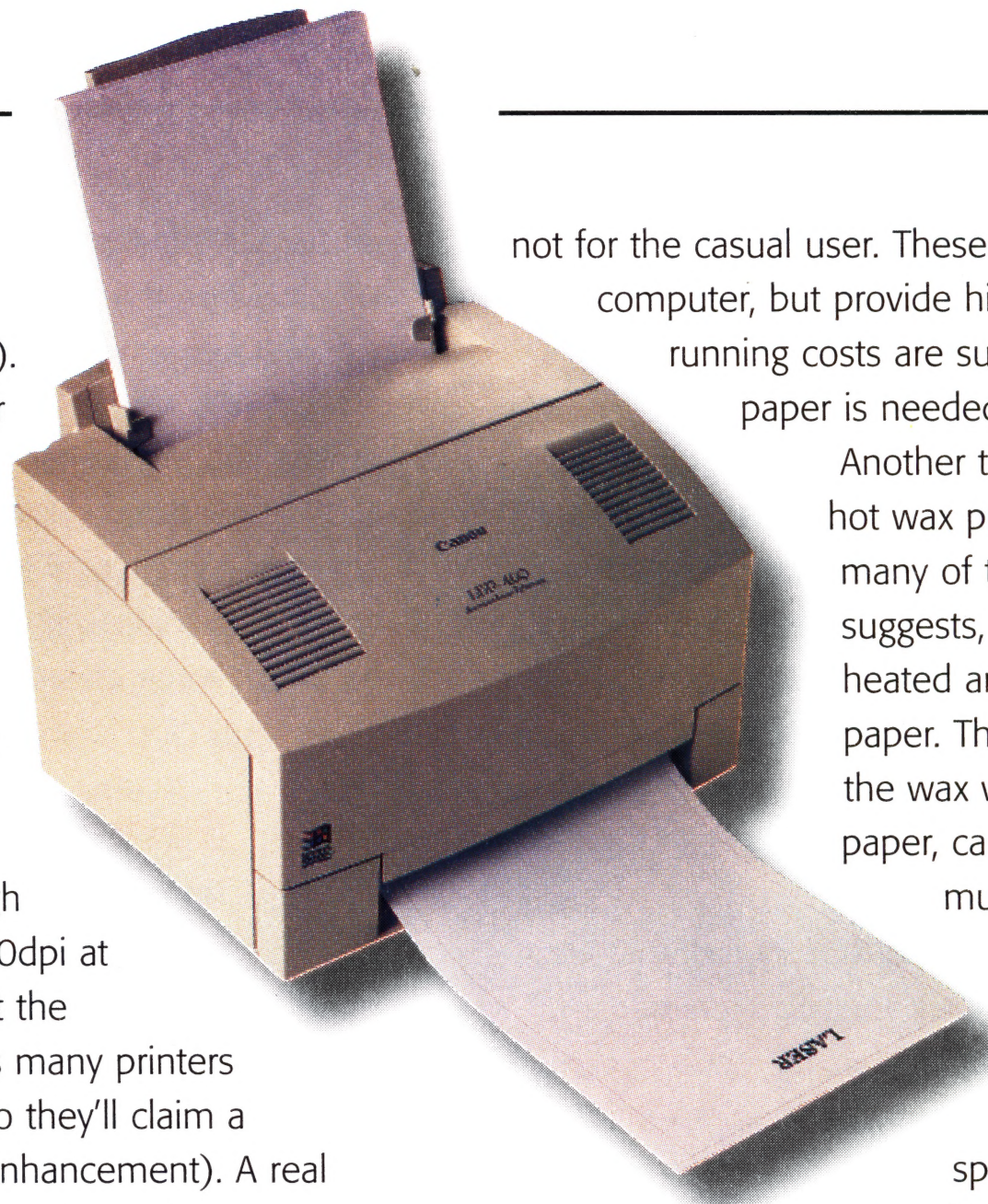
Laser printers can be fast. If you're prepared to pay, you can buy models that will print out up to 12 pages a minute, but very detailed pages print more slowly. And unless you spend a lot of money, you won't be able to find a colour laser, or one that prints on paper larger than A4.

Specialist printers

You can buy colour laser printers, but you'll probably have to pay a lot of money for one. The advantage of colour laser printers is that they're faster than colour inkjets, but the quality of the colour printing is often not as good.

Lasers use four toner colours, usually cyan, magenta, yellow and black, and mix other colours from these. Although they're becoming more popular, they're still not common, and as a result, they're expensive to run, and best suited to businesses that need to produce colourful information where it's not so important that the colours are accurate. A colour laser would be ideal for an annual report with coloured graphs, for instance, but not for checking the colours in photos that you plan to print professionally later.

For high quality colour printing you should consider other types of printing. The best quality is obtained by printers that use a process called dye sublimation, but it's certainly



not for the casual user. These printers much more than a computer, but provide highly accurate colours. The running costs are substantial too, since special paper is needed.

Another type of colour printer is the hot wax printer, although there aren't many of these around. As the name suggests, blocks of coloured wax are heated and used to print on the paper. The advantage is that any paper the wax will stick to, like photocopier paper, can be used, making them much cheaper to use. Again, however, these printers are very expensive.

You'll sometimes find cheaper printers that use a special ribbon, called thermal transfer printers. These produce good quality prints, and the printers cost very little. But don't be fooled into thinking they're cheap. The ribbons can only be used once, and you could find each sheet of paper costing a fortune in ribbon alone.

Consumables



When you buy a printer, remember that you're making a commitment to continue paying out money. You'll constantly need to keep the printer stocked with paper and ink or toner.

Choose the wrong model and you could end up spending a fortune, so check out how much it will cost you to run before making your decision. The first thing is to find out how easily you can obtain supplies. If the printer's not a well-known make, or it's an end-of-line special, will you be able to get supplies for much longer? Will you have to go back to just one shop, or can you shop around?

With inkjet printers, remember that most of your printing is likely to be in black, so can you replace the black ink on its own, or will you have to throw away perfectly good colour ink just because the black section of a cartridge is worn out? Remember that the stunning printouts in the shop may well have been done on expensive paper. Ask to see colour printing on ordinary paper.

With a laser printer, find out how much toner cartridges cost and be prepared for a shock. On some models, it could be more than a cheap inkjet – and you need to multiply that by four for colour. You can buy recycled units more cheaply, but find out first whether or not that will invalidate your warranty.

Backup & storage

Give yourself more room for storing files and back up the precious data on your PC.

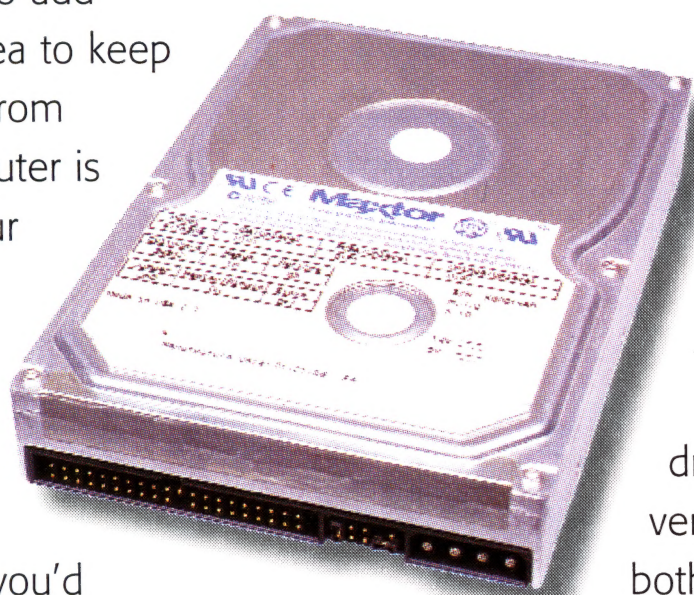
Your PC has a hard disk (below), which stores programs you use to do your work as well as the work you create. No matter how large the disk is and how much space you think you have, you'll soon find out that you're running short, and that's the time to think about adding storage.

There are other good reasons to add storage to your PC. It's a good idea to keep a copy of vital information away from your computer, in case the computer is stolen or destroyed by fire, or your data is accidentally deleted. You might also want to take work to and from your office or school — and the floppy disk drive fitted to every PC can't hold enough information, not to mention that you'd need over 1,000 floppy disks (below) to make a copy of the typical PC's hard disk drive.

So, what types of storage are there, and when should you use them? And how easy is it to integrate them with your PC? There are three main storage systems: expansion, to allow you to add space to your PC; removable, which you can unload and swap round easily; and backup, for keeping information safe. Adding storage to

your PC is not difficult.

Sometimes, you'll need to take the PC's case off, and plug in a new disk drive, but even so, it's usually pretty straightforward, and you'll soon be up and running with much more capacity than before.



and you should consider a fast SCSI audiovisual drive, which is designed to save information quickly enough for video. A slower drive just means jerky pictures.

Most PCs have a hard drive and a CD drive fitted, which means you are limited to two more hard drives using the EIDE connectors built in to the PC. If you want to add anything more, you'll have to look for one of the other types of connector. If you just need more space, an extra hard disk is the cheapest option.

Removable storage

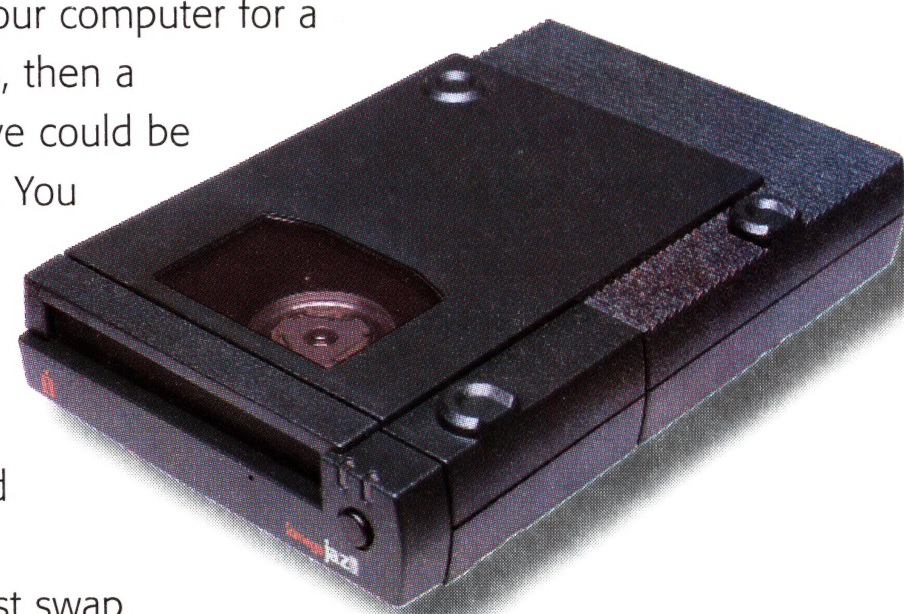
Removable storage consists of larger versions of your floppy disk drive. With a removable drive, you can eject one disk, and load another one. If you can afford more disks, you have an effectively unlimited amount of storage space.

Removable storage drives start with the Iomega Zip drive, which is available in both 100Mb and 250Mb versions. The costlier Iomega Jaz drives are available in both 1Gb and 2Gb versions and they perform almost as quickly as a hard disk. In all cases, the storage drives that connect to a SCSI card are faster than those that connect to your computer's printer port, although they are probably not quite so versatile.

If you use your computer for a variety of tasks, then a removable drive could be a good choice. You could have, for instance, one with all your office work on it, and another full of games, and just swap them over when you need to.

But remember: sometimes you might want two things on different disks, and then you'll have problems.

Bear in mind, too, that although removable disks do give you unlimited amounts of storage, you'll also have to pay a lot of money for disks, and it may often be cheaper to buy a single large hard disk drive. However, if you need to move large files from one computer to another, or you can easily separate out different types of information that you don't need at the same time, then a removable drive is a great option. You can also use them to back up information that you want to keep safely somewhere else.



Expansion storage

The main type of expansion storage is an extra hard disk drive; your computer will already have a main disk drive referred to as drive C. Add an extra one and it becomes drive D, giving you more space for work and so on. If you start to experiment with things like editing video on your PC, it's worth having a drive just for saving things like that,



There are also, of course, removable storage devices that you can't save information on, such as CD ROM and DVD (Digital Versatile Disc). These are used to give you access to information prepared by someone else. A DVD drive can

hold the equivalent of several CDs and can even play back feature films, although you need a decoder card for that.

Backup storage

Computers are pretty reliable, but things do go wrong with them, and in the worst case you might lose the data that you've just been working on. It's important, therefore, to have a backup copy. Statistics show that a business that loses all its important data is very likely to fail altogether.

Backup storage is available in a number of forms. You can, of course, use removable drives like Zip or Jaz disks to save information, although it's not a cheap option.

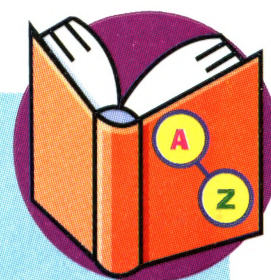
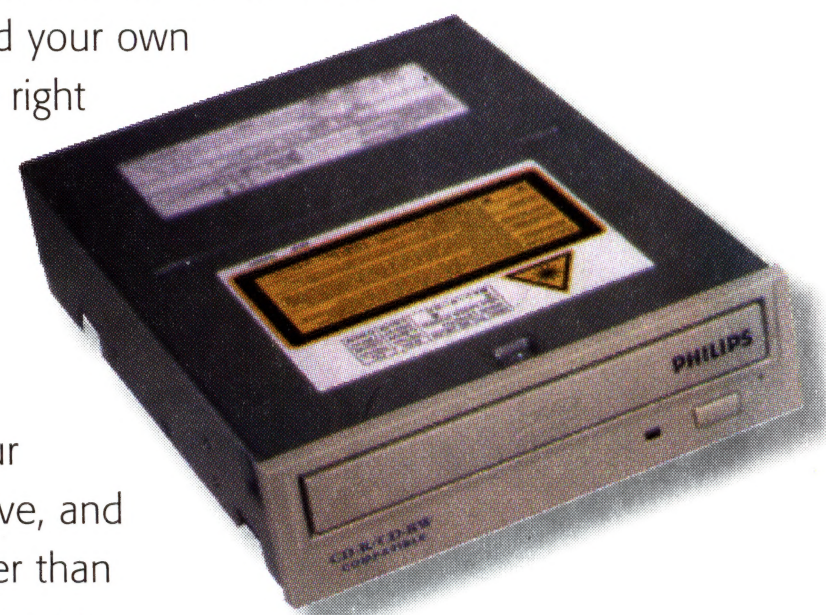
The cheapest way to back up your data is with a tape drive. This is a unit that connects to your computer and takes a small cassette of tape, copying all the information from your hard drive to the tape. When something goes wrong, you can copy it back. But make sure you have a copy of the disks you need to access the tape drive.

There are many kinds of tape drive available, ranging from units that can only store a couple of hundred megabytes per tape and plug into your computer's EIDE connector, just like a new disk, to high capacity models that use DAT (Digital Audio Tape) and can store the contents of a few hard disks on a single tape. Tapes are fairly cheap, so it's easy to buy enough to keep lots of copies of your important information.

On the down side, however, if you just want to find one thing from a tape, you'll have the same problem as when you want to watch a single program in the middle of a video tape; it may take some time to find it. As a result, many people also use some type of removable storage to back up information that they might want to access quickly.

You can also use special versions of CD and DVD drives to back up information; CD-R (Recordable) and CD-RW (Re-Writable) both allow you to save information on blank CDs, and DVD-R does the same for DVD.

You can even record your own music CDs with the right programs. The disadvantage is that with a CD, it will still take a few blank disks to copy everything from your computer's hard drive, and it's also much slower than other ways of backing up.



Jargon buster

ATA A common interface for storage devices which is also sometimes known as EIDE.

CD-R This stands for CD-Recordable — a CD that you can save information on once. You can't erase things that you've already copied to the disk.

CD-RW This stands for CD-Re-writable. This type of CD can be used just like an ordinary disc; you can delete and re-record data.

DVD-R A re-writable form of DVD, that holds up to 5.4Gb of information.

DVD-ROM Read only DVDs, similar to CD-ROMs, but with a much higher capacity.

EIDE The standard way of connecting hard disks and CD-ROMs in modern PCs. Most computers can have up to four EIDE devices installed, including removable disks, tapes and CDs.

FireWire This is a type of high speed connector, also called 1394, that is starting to appear on digital camcorders and may also crop up on some hard disks designed for multimedia use. It's faster than USB, but don't expect to find it on cheap PCs just yet.

IDE The standard way of connecting hard disks on PCs. Now superseded by EIDE, but the terms are often interchanged.

SCSI One of the older standards for connecting disk drives and other storage devices to a computer. You'll usually need a special SCSI controller (also called an adapter card) to add SCSI to your computer. SCSI drives can be very fast, but are more expensive than EIDE types.

USB This stands for universal serial bus. A type of connector found on most new PCs, which can be used for a number of things, including some external storage devices such as Zip drives.

Peripherals

You can get even more from your computer if you buy specialised add-ons or peripherals.

Your PC can do many wonderful things, but there are extra goodies you can buy to make it more powerful. They're called peripherals: things that plug in and give you extra facilities. For some people they're just gadgets, but for others they are the factor that makes it worth buying a PC.

Before you go shopping find out what connectors you have on your PC. A modern PC will have one or more USB ports, and most of the gadgets we've listed here are available in versions to plug into them. USB versions are much easier to set up: you just plug the new peripheral into the socket of the last one, and the PC will install the software for you. If you don't have USB connectors, you can still buy all these peripherals, but setting them up will be harder, and you may have to fit extra parts in your PC.

Joystick

PCs can be great for playing games, but if you want fast shooting action, then using a keyboard and mouse lacks a certain something. You can help win better odds against the aliens or a more realistic chance of flying that jet plane with a joystick or some other type of game controller.

Digital camera

Get snap happy with a digital camera. You can take pictures and transfer them to your computer in minutes, send a picture of the new baby via email to relatives in Australia, or add snaps to a Web page. With a good colour printer, you can make proper prints.

Just about any camera will do if you just want to email pictures or put them on the Internet. But if you want to print them, spend more money on a 'mega-pixel' camera, which takes higher quality pictures, otherwise snaps will always look grainy. And remember that while a screen built into the camera looks good, it uses batteries quickly, so choose one with an old-fashioned viewfinder too.



Scanner

A scanner lets you turn anything on paper into a computer document. With a modem, your PC becomes a fax machine. With a printer, it can be used as a copier.

A flatbed scanner looks like a small photocopier and takes up lots of space, but you can scan almost anything with it. Other options are hand scanners like the Visioneer Paperport, that pull a sheet of paper through automatically. They're compact, but you can't scan a book unless you cut it up. Photo enthusiasts can even buy special film scanners that give high quality.

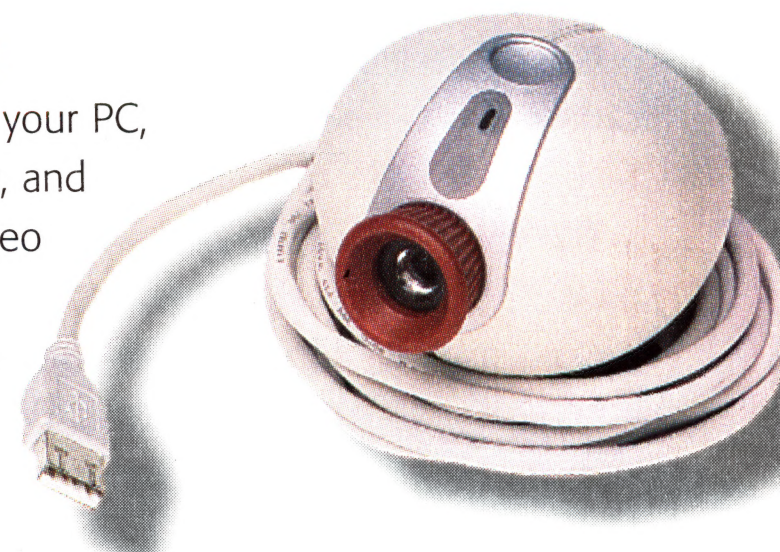


Video camera

Add a video camera to your PC, hook up to the Internet, and you have an instant video phone. Or with other software, the computer will save pictures of everyone who comes into the room!

Cameras come in two types. USB cameras plug in to the USB port, while others come with a capture card which can also be used with a video recorder or camcorder, allowing you to save holiday clips, or other videos on your hard disk.

For serious video work, like editing films, buy a dedicated capture card and use your camcorder. If it's just chatting to people online, a USB camera will give hours of fun.



Art pad

An art pad is the best way to create PC art.

You can draw as if you are using a pen and paper on a plastic tablet. They come in different sizes, so you can find one that's the right size for your desk and the type of drawings you want to do. Check whether the pad replaces your mouse or can be used alongside it.

You may have to keep swapping connectors if the pad's not convenient to use when you're not drawing.